

IN THE CLAIMS

For the convenience of the Examiner, all pending claims of the present Application are shown below whether or not an amendment has been made.

1. (Currently Amended) An apparatus for increasing fractionation capacity and efficiency of chemical compounds within a preexisting distillation column with a vessel having at least one preexisting fractionation tray deck with a multiplicity of openings, comprising:

a conversion microdispenser having a top wall and a plurality of side walls, the top wall and at least one side wall each having a plurality of apertures, the microdispenser configured to attach to the fractionation tray deck and overlie through at least one of the multiplicity of openings such that vapor from beneath the tray deck flows through the microdispenser to interact with liquid flow above the tray deck ~~whereby greater and more efficient vapor-liquid interaction is promoted.~~

92
2. (Currently Amended) The apparatus of Claim 1 wherein the at least one side wall comprises two side walls each having a different number of the apertures ~~the microdispenser is directionally oriented.~~

3. (Original) The apparatus of Claim 1 wherein the microdispenser is a valve.

4. (Original) The apparatus of Claim 3 wherein the valve has a vapor deflecting perforation such that the vapor has greater contact with the liquid.

5. (Currently Amended) The apparatus of Claim 1 wherein the microdispenser is an ~~an~~ individual bubble promoter.

6. (Currently Amended) The apparatus of Claim 1 ~~5~~ wherein the microdispenser is configured to overlie at least two of the openings, the two openings separated by a beam supporting the fractionation tray deck is round.

7. (Currently Amended) The apparatus of Claim 1 5 wherein the plurality of apertures of the at least one side wall are spaced evenly from each other and distributed throughout the at least one side wall microdispenser is square.

8. (Currently Amended) The apparatus of Claim 1 5 wherein the number of apertures of the top wall is greater than the number of apertures of the at least one side wall microdispenser is rectangular-shaped to cover at least one multiplicity of openings and at least a portion of the tray deck.

9. (Currently Amended) The apparatus of Claim 1 5 wherein the top wall has at least six apertures for each of the at least one of the multiplicity of openings the bubble promoter has one or more flat sides.

92
cont.
10. (Currently Amended) The apparatus of Claim 1 wherein the plurality of apertures of the top wall define a plurality of groups each having a different number of apertures, wherein the groups are separated from one another by a distance greater than a maximum distance between any two adjacent apertures with a particular group. 5 wherein the bubble promoter has perforated sides.

11. (Original) The apparatus of Claim 5 wherein the bubble promoter has at least one vapor deflecting perforation such that the vapor has greater contact with the liquid.

12. (Currently Amended) The apparatus of Claim 1 wherein the microdispenser is configured to attach to the fractionation tray deck and overlie two or more than one openings of the tray deck.

13. (Currently Amended) The apparatus of Claim 1 wherein the microdispenser is total number of apertures defined by the top wall is greater than the total number of apertures defined by all of the side walls continuous over a portion of an inlet section of the tray deck.

14. (Currently Amended) The apparatus of Claim 1 wherein the plurality of apertures of the top wall are spaced evenly from each other and distributed throughout the top wall ~~the microdisperser spans over a tray support beam.~~

15. (Currently Amended) The apparatus of Claim 1 wherein the microdisperser is configured to be installed at or near a tray support beam.

16. (Currently Amended) The apparatus of Claim 1 wherein at least one of the apertures of the top wall and at least one of the apertures of the at least one side wall are different in size ~~the microdisperser is installed at or near a peripheral edge of the fractionation tray deck near a side wall of the vessel.~~

Claims 17-38 (withdrawn).